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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,198	10/20/2003	Joseph D. Rainville	8540G-000213	4431

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EXAMINER
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THOMPSON, MELISSA

ART UNIT	PAPER NUMBER
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1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/689,198

Applicant(s)

RAINVILLE ET AL.

Examiner

Melissa B. Thompson

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>see office action</u> .                                       | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Response to Amendment***

1. The preliminary amendment filed on January 22, 2007 has been considered;
  - a. Claims 1-26 are pending.

***Election/Restrictions***

2. Applicant's arguments, filed January 22, 2007, with respect to the restriction of claims have been fully considered and are persuasive. The restriction of claims has been withdrawn.

***Information Disclosure Statement***

3. The IDS filed on October 20, 2003 has been considered.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim (U.S. Patent Number 5,501,083).

Kim discloses a system comprising a compressor (21) with a motor (20) and a controller (50). The controller (50) can select a power source from either a main power source (10) or a supplemental power source (62 and 63). The supplemental power source (62 and 62 in Figure 1) is capable of operating either at a minimum frequency or a higher frequency (abstract). The supplemental

power source (62 and 63) operates at a voltage that is higher than a reference voltage; the main power source (10) operates at the reference frequency or below (claim 4 of the prior art, as applied to claim 1 of the instant application).

By including all of the structural elements of claim 1, the apparatus is capable of performing the functions recited in claims 2-5, and 7-9. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In *re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429,1431-32 (Fed. Cir. 1997) "[A]pparatus claims cover what a device is, not what a device does." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987) (*MPEP* 2114).

6. Claims 1-5, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Hewitt (U.S. Patent Number 6,034,445).

Hewitt discloses a system comprising a compressor and a motor (20) with a controller (22). The controller (22) can select a power source from either a main power source (32 or 38 or 40) or a supplemental power source (30). The supplemental power source is a battery. The system controls which power

sources are used by opening and closing two switches (36 and 46 in Figure 1). Therefore, the controller can close both switches, allowing both the main and supplementary power sources to be used together, varying the speed of the compressor (as applied to claim 1).

By including all of the structural elements of claim 1, the apparatus is capable of performing the functions recited in claims 2-5, and 7-9. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) "[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987) (*MPEP* 2114).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hewitt (U.S. Patent Number 6,034,445) in view of Aoyagi et al. (U.S. Publication Number 2001/0051291 A1)

The disclosure of Hewitt as applied to claim 1 discussed above is incorporated herein.

Hewitt does not teach that the supplemental power source is a capacitor.

Aoyagi et al. teach a power generation system that has a power unit such as a battery or a capacitor (paragraph 4, as applied to claim 6).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a capacitor instead of a solar power source as the supplemental power in the system of Hewitt. The use of a capacitor as a power source is well known in the art and it is also well known to use a capacitor as a substitute for a solar source.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hewitt (U.S. Patent Number 6,034,445) in view of Raiser (U.S. Patent Number 6,616,424 B2).

The disclosure of Hewitt as applied to claim 1 discussed above is incorporated herein.

Hewitt does not teach that the controller regeneratively brakes.

Raiser teaches that the power source can be used to realize regenerative braking (column 1, lines 39-40, as applied to claim 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the regenerative braking of Raiser in the compressor system of Hewitt so that the kinetic energy can be partly converted into electrical energy and then stored (column 1, lines 41-43).

12. Claims 10-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hewitt (U.S. Patent Number 6,034,445) in view of Raiser (U.S. Patent Number 6,616,424 B2) and view of Aoyagi et al. (U.S. Publication Number 2001/0051291 A1).

Hewitt teaches a system comprising a compressor and a motor (20) with a controller (22). The controller (22) can select a power source from either a main power source (32 or 38 or 40) or a supplemental power source (30). The

supplemental power source is a battery. The system controls which power sources are used by opening and closing two switches (36 and 46 in Figure 1). Therefore, the controller can close both switches, allowing both the main and supplementary power sources to be used together, varying the speed of the compressor (as applied to claim 10).

Hewitt does not teach the compressor system in a fuel cell system or that the controller regeneratively brakes or that the supplemental power source is a capacitor.

Raiser teaches a variable speed compressor (10) with a motor (12) and a controller (46) with a fuel cell (22) in a fuel cell system. The compressor is powered by a main power source (50 in Figure 1, as applied to claim 10).

Raiser teaches that the power source can be used to realize regenerative braking (column 1, lines 39-40, as applied to claim 19).

By including all of the structural elements of claim 10, the apparatus is capable of performing the functions recited in claims 11-14, and 16-20. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) "[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to



be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987) (*MPEP* 2114).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the compressor system of Hewitt in the fuel cell system of Raiser. The difference between the compressors system is the addition of a power source that is a matter of design choice. By having an added power source, the strain on the motor of the compressor system would be less, causing the motor to last longer. Therefore, it would have been obvious to use an additional power source in the compressor system. It would have been obvious to one of ordinary skill in the art at the time of the invention to include the regenerative braking of Raiser in the compressor system of Hewitt so that the kinetic energy can be partly converted into electrical energy and then stored (column 1, lines 41-43).

Aoyagi et al. teach a power generation system that has a power unit such as a battery or a capacitor (paragraph 4, as applied to claim 15).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a capacitor instead of a solar power source as the supplemental power in the system of Hewitt. The use of a capacitor as a power source is well known in the art and it is also well known to use a capacitor as a substitute for a solar source.

13. Claims 21-23 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raiser (U.S. Patent Number 6,616,424 B2) in view of Kim (U.S. Patent Number 5,501,083).

Raiser teaches a method of operating a variable speed compressor (10) with a motor (12) and a controller (46) with a fuel cell (22) in a fuel cell system in Figure 1. The compressor is powered by a main power source during a normal mode (50 in Figure 1). Raiser teaches that through higher output, or a rapid transient mode, the power of the motor (12) increases and thus the speed of the compressor (10 in Figure 1). The motor can be used for regenerative braking, taking kinetic energy and partly converting into electrical energy which can be stored in the battery (column 1, lines 39-40, as applied to claim 21).

Raiser teaches that a higher output increases the power of the motor, increasing the speed of the compressor (column 6, lines 25-30). Therefore, a second capacity of the motor is greater than a first capacity (as applied to claim 22).

Raiser does not teach powering a variable capacity compressor from a supplemental power source (21-26). Raiser does not teach that the second capacity is less than the first capacity when operating in a downward rapid transient mode (23). Raiser does not teach charging a supplemental power source during a normal mode (25). Raiser does not teach using power from a supplemental power source to increase the speed of the motor in an upward rapid transient mode.

Kim teaches a system comprising a compressor (21) with a motor (20) and a controller (50). The controller (50) can select a power source from either a main power source (10) or a supplemental power source (62 and 63), or a solar panel. The supplemental power source (62 and 63 in Figure 1) is capable of operating either at a minimum frequency or a higher frequency (abstract). The supplemental power source (62 and 63) operates at a second capacity that is higher than a reference voltage; the main power source (10) operates at a first capacity that is either the reference frequency or below (claim 4 of the prior art, as applied to claim 21 of the instant application).

Kim teaches that the solar panel has a frequency greater than that of the main power source (claim 4 of the prior art, as applied to claim 22 of the instant application).

Kim teaches that the solar panel has a frequency that is less than that of the main power source when operating at a minimum (abstract, as applied to claim 23).

Kim teaches a solar panel as the supplemental power source and when not in use, the solar panel would charge while the main power source was being used (as applied to claim 25).

Kim teaches that the supplemental power source is used to increase the speed of a motor by operating at a second capacity which is higher than a first capacity (claim 4 of the prior art, as applied to claim 26 of the instant application).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the variable capacity compressor with a supplemental power source of Kim in the operating method of Raiser. The difference between the compressors system is the addition of a power source that is a matter of design choice. By having an added power source to increase the speed of the motor, the strain on the motor of the compressor system would be less, causing the motor to last longer. Therefore, it would have been obvious to use an additional power source in the compressor system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the supplemental power source of Kim, that operates at a downward transient mode where the second capacity is less than the first capacity, in the operating method of Raiser. The supplemental power source must eventually ramp down when it is done being used and as it ramps down there is a point where the second capacity is less than the first capacity. By having a supplemental power source that is used to ramp up the motor of the compressor, it must include the feature of ramping down and reaching a capacity that is lower than the first causing the system to return to normal mode and a main power source.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the supplemental power source that charges during normal mode of Kim in the operating method of Raiser. By using a supplemental power source that charges when not in use would be obvious for operational purposes.

In order to use the supplemental power source when the time is needed to ramp up the compressor, it must be able to charge up at some point. The obvious time to charge the supplemental power source would be when it is not in use, which is what the supplemental power source of Kim of does.

14. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raiser (U.S. Patent Number 6,616,424 B2) and Kim (U.S. Patent Number 5,501,083) as applied to claim 21 above, and further in view of Aoyagi et al. (U.S. Publication Number 2001/0051291 A1).

Raiser and Kim do not teach that the supplemental power source is a capacitor.

Aoyagi et al. teach a power generation system that has a power unit such as a battery or a capacitor (paragraph 4, as applied to claim 24).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a capacitor instead of a solar power source as the supplemental power in the system of Hewitt. The use of a capacitor as a power source is well known in the art and it is also well known to use a capacitor as a substitute for a solar source.

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa B. Thompson whose telephone number is (571) 272-2758. The examiner can normally be reached on Monday through Friday from 8am to 5pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MBT

  
GREGG CANTELMO  
PRIMARY EXAMINER

16 APRIL 2007